

Date: Mon, 7 Mar 94 04:30:45 PST  
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>  
Errors-To: Ham-Space-Errors@UCSD.Edu  
Reply-To: Ham-Space@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Space Digest V94 #50  
To: Ham-Space

Ham-Space Digest                    Mon, 7 Mar 94                    Volume 94 : Issue 50

Today's Topics:

\* G.R.A.P.S. \*  
ANS-064 BULLETINS  
GPS information/schematics  
GPS Receiver Boards  
Help with FCC Notification fpr SPACE operations ?  
v219331.zip - Hams: Converts raw OSV's to Two-Line Elements

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>  
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 6 Mar 94 23:41:58 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: \* G.R.A.P.S. \*  
To: ham-space@ucsd.edu

SB ALL @ AMSAT < LU3BDH \$LU3AGJ20892  
\* G.R.A.P.S. \*

I have the pleasure to announce that on March 1st was constituted the  
"G.R.A.P.S" GRUPO RADIOAFICIONADOS ARGENTINO POR SATELITE.  
ARGENTINE AMATEURS VIA SATELLITE GROUP.

The objectives of this group are strictly technical, in the developmentt, study  
and construction of satellite experiments, with the logic ambition that our  
"LUSAT-1" don't get held in history.

Unfortunately, our technicians lost the opportunity to apply their knowhow and ambitions in the multi-national Phase-3D.

Our heading is to re-create the experiences of our "LUSAT-1", and others that may come from other countries, sharing the participation and looking forward for the major goal: another satellite!

I invite everyone that want to join the group actively. He/she will have a place, being a ham or not, being universities, technicians, engineers, schools, radio clubs, other institutions, etc.

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Date: Sun, 6 Mar 1994 13:22:35 MST  
From: ihnp4.ucsd.edu!usc!math.ohio-state.edu!cyber2.cyberstore.ca!nntp.cs.ubc.ca!  
alberta!ve6mgs!usenet@network.ucsd.edu  
Subject: ANS-064 BULLETINS  
To: ham-space@ucsd.edu

SB SAT  
UOSAT-2 TURNS 10 YEARS OLD

HR AMSAT NEWS SERVICE BULLETIN 064.01 FROM AMSAT HQ  
SILVER SPRING, MD MARCH 6, 1994  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-064.01

UOSAT-2 (UO-11) Celebrates 10 Years Of On-Orbit Service

At 17:59 UTC on March 1st, 1984, the second satellite designed and built by the University of Surrey, UoSAT-2 (UO-11) was launched on a Delta rocket from the Western Test Range at Vandenberg Air Force Base, California.

Among its many experiments, UoSAT-2 carried the Digital Communications Experiment, which was one of the first (if not THE first!) non-military use of store-and-forward techniques with Low Earth Orbiting satellites. UoSAT-2 was an early test-bed for many of the technologies that have since been incorporated into a number of other packet radio satellites.

For all those who wonder how long these satellites last, it should be noted that UoSAT-2 is still operational, ten years after launch!

Happy Birthday UoSAT-2 !!!

[The AMSAT News Service (ANS) would like to thank Eric Rosenberg (WD3Q) for the information contained in this bulletin item. Eric can be

contacted at his INT

/EX  
SB SAT  
SAMPLE RS-15 KEPS

HR AMSAT NEWS SERVICE BULLETIN 064.02 FROM AMSAT HQ  
SILVER SPRING, MD MARCH 6, 1994  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-064.02

KE3HP Presents A "Sample" Keplerian Element Set For RS-15

Based on information about RS-15's orbital parameters in last week's ANS bulletins, KE3HP has generated a set of predicted elements for this satellite. KE3HP assumed that the launch would be from Plesetsk at 12:00 UTC on 01-MAY-94. He generated these elements using OrbiTrack, an excellent MacIntosh shareware program by Bill Bard.

Satellite	RS-15 predicted
Catalog Number	99999
Epoch	94 121.57362967 05/01/94 13:46:02 UTC
Drag2	0.00000000 Rev/Day^2
Inclination	67.0000 Deg
RAAN	22.8163 Deg
Eccentricity	0.0001152
Argument of Perigee	360.0000 Deg
Mean Anomaly	0.0000 Deg
Mean Motion	10.73887722 Rev/Day
Epoch Revolution	0
Semimajor Axis	8678.14 km
Precession	1.3232 Deg West/Day
Period	134.09 Min
Apogee	2301.00 KM 1429.77 SM 1242.44 NM
Perigee	2299.00 KM 1428.53 SM 1241.36 NM

The only element strongly influenced by the launch date and time will be RAAN. The primary difference is that these predicted elements will show the satellite passing over your QTH at a different time than when the real bird will. If you take these elements and "plug" them into your satellite tracking programs, one of the fascinating features that you will discover about this orbit is that even on a low elevation pass (10 degs or less) RS-15 is visible for up to 20 minutes! This will make RS-15 an excellent satellite for Mode A operations. Please stay tuned to the AMSAT News Service (ANS) bulletins for further information about the launch of RS-15.

[The AMSAT News Service (ANS) would like to thank KE3HP for the

information contained in this bulletin item.]

/EX  
SB SAT  
AO-13 OPERATIONS NET

HR AMSAT NEWS SERVICE BULLETIN 064.03 FROM AMSAT HQ  
SILVER SPRING, MD MARCH 6, 1994  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-064.03

#### Current AMSAT Operations Net Schedule For A0-13

AMSAT Operations Nets are planned for the following times. Mode-B Nets are conducted on A0-13 on a downlink frequency of 145.950 MHz. If, at the start of the OPS Net, the frequency of 145.950 MHz is being used for a QSO, OPS Net enthusiasts are asked to move to the alternate frequency of 145.955 MHz.

Date	UTC	Mode	Phs	NCS	Alt NCS
13-Mar-94	0130	B	075	VE2LVC	W90DI
19-Mar-94	1730	B	073	W5IU	WA5ZIB
26-Mar-94	2130	B	084	WA5ZIB	W5IU

Any stations with information on current events would be most welcome. Also, those interested in discussing technical issues or who have questions about any particular aspect of OSCAR satellite operations, are encouraged to join the OPS Nets. If neither of the Net Control Stations show up, any participant is invited to act as the NCS.

#### A0-13 ZR0 Tests For March 1994

The following schedule of Mode "B" tests were chosen for convenient operating times and favorable squint angles. The tests can be heard on 145.840 MHz. Andy McAlister (WA5ZIB) will conduct all the tests. Mode "JL" tests will no longer occur due to the failure of A0-13's 70CM transmitter.

Day	Date (UTC)	Time	Areas covered
Saturday	Mar. 19, 1994	1930 UTC	NA, SA, Europe, Africa
Saturday	Mar. 26, 1994	2315 UTC	NA, SA

Note that the dates and days are shown in "UTC". Any changes will be announced as soon as possible via the AMSAT HF and A0-13 Operations Nets.

All listener reports with date of test and numbers copied should be sent to Andy MacAllister (WA5ZIB), AMSAT V.P. User Operations, 14714 Knights Way Drive, Houston, TX 77083-5640. A report will be returned verifying the level of accurate reception. An S.A.S.E. is appreciated but not required.

/EX  
SB SAT  
WEEKLY OSCAR STATUS REPORTS

HR AMSAT NEWS SERVICE BULLETIN 064.04 FROM AMSAT HQ  
SILVER SPRING, MD MARCH 6, 1994  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-064.04

Weekly OSCAR Status Reports: 06-MAR-94

A0-13: Current Transponder Operating Schedule:

L QST

Mode-B : MA 0 to MA 90
Mode-BS : MA 90 to MA 120
Mode-S : MA 120 to MA 145   <- S transponder; B trsp. is OFF
Mode-S : MA 145 to MA 150   <- S beacon only
Mode-BS : MA 150 to MA 180   Blon/Blat 180/0
Mode-B : MA 180 to MA 256
Omnis : MA 230 to MA 30   Move to attitude 240/0, Apr 04

[G3RUH/DB2OS/VK5AGR]

F0-20: The following is the current schedule for transponder operations:

ANALOG MODE:

09-MAR-94 7:05 -TO- 16-MAR-94 7:30 UTC  
23-MAR-94 7:52 -TO- 30-MAR-94 8:15 UTC

DIGITAL MODE: Unless otherwise noted above.

[Kazu Sakamoto (JJ1WTK) qga02014@niftyserve.or.jp]

The AMSAT NEWS Service (ANS) is looking for volunteers to contribute weekly OSCAR status reports. If you have a favorite OSCAR which you work on a regular basis and would like to contribute to this bulletin, please send your observations to WD0HHU at his CompuServe address of 70524,2272, on INTERNET at wd0hhu@amsat.org, or to his local packet BBS in the Denver, CO area, WD0HHU @ WOLJF.#NECO.CO.USA.NOAM. Also, if you find that the current set of orbital elements are not generating the correct AOS/LOS times at your QTH, PLEASE INCLUDE THAT INFORMATION AS WELL. The information you provide will be of value to all OSCAR enthusiasts.

/EX

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Date: 1 Mar 94 14:56:48 GMT  
From: agate!howland.reston.ans.net!newsserver.jvnc.net!synapse.bms.com!helix!  
gopstein@ucbvax.berkeley.edu  
Subject: GPS information/schematics  
To: ham-space@ucsd.edu

In article <2971474522.0.p00926@psilink.com> p00926@psi.com writes:

>Hello netters,  
> I'm looking for information/schematics on how to make a GPS receiver.  
> It must be fairly simple to make and cost around \$10.00 to build. :-)  
> Seriously though, I'd like it to be resonable in price. I want to build  
> one to use for making maps for orienteering and also to track myself  
> on excursions into the deep woods. There is nothing I can't handle  
> in the digital world but the world of high frequency analog is kind  
> of a mystery. Any help would be greatly appreciated.  
>

Forget about building the actual receiver, I don't believe that mere mortals would have much success -- the GPS signal is extremely complicated.

You can, however, buy an OEM GPS receiver (mine was a Magellan) and build a handheld case and display around it. That's what I did. I used a Motorola 68HC705 microprocessor and a 16x2 LCD display. The boards use regular asynch serial at normal baud rates for communications, so interfacing is really easy.

At the time, however, the price of complete handheld units was much higher than the cost of the receiver boards. That's not really true any more. The board I bought was about \$400, which is in the ballpark of what you can get complete GPS units for now.

Rich, KD2CQ

--

Rich Gopstein

gopstein@bms.com  
rutgers!bms.com!gopstein

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Date: 7 Mar 1994 04:47:08 GMT  
From: ihnp4.ucsd.edu!sdd.hp.com!hpscit.sc.hp.com!rkarlqu@network.ucsd.edu  
Subject: GPS Receiver Boards

To: ham-space@ucsd.edu

The Motorola GPS receiver is less than \$150 in 100's. It has six channels and just about all the features you would ever want.

Rick Karlquist N6RK

rkarlqu@scd.hp.com

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Date: 5 Mar 1994 06:21:07 GMT

From: ihnp4.ucsd.edu!usc!yeshua.marcam.com!news.kei.com!eff!news.umbc.edu!

haven.umd.edu!umd5.umd.edu!w3eax.umd.edu!ceham@network.ucsd.edu

Subject: Help with FCC Notification fpr SPACE operations ?

To: ham-space@ucsd.edu

Hi, I am trying to find out what exaclty is needed in terms  
of an FCC notification for space operations.

We are currently developing an amateur radio experiment / payload  
to fly for approximately 48 Hours in a low earth orbit  
(space shuttle).

We tried contacting the FCC, but got the run around.  
any info would be appreciated in terms of the  
notification and STA (if required).

the experiment is basically based on packet radio, and GPS.  
will use 2m.

Maurice  
ceham@w3eax.umd.edu

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Date: 5 Mar 94 18:45:52 GMT

From: nprdc!ihnp4.ucsd.edu!swrinde!cs.utexas.edu!convex!news.utdallas.edu!wupost!  
simtel.coast.net!msdos-ann-request@network.ucsd.edu

Subject: v219331.zip - Hams: Converts raw OSV's to Two-Line Elements

To: ham-space@ucsd.edu

I have uploaded to the SimTel Software Repository (available by anonymous  
ftp from the primary mirror site OAK.Oakland.Edu and its mirrors):

pub/msdos/hamradio/  
v219331.zip      Hams: Converts raw OSV's to Two-Line Elements

The Vector to Two-line Elements (VEC2TLE) software provides the user with the capability to convert position/velocity/time state vectors of a variety of formats to National Aeronautics and Space Administration (NASA) Compatible Two-Line Element (TLE) sets. These element sets contain orbit descriptions compatible for propagation with the Simplified General Perturbations (SGP) and SGP Version 4 (SGP4) orbit theories developed for use by the North American Aerospace Defense Command (NORAD) and United States Space Command (USSPACECOM).

TLEs have become an increasingly-popular source of orbital data. This is due mainly to the fact that this format of data is available for nearly all Earth-orbiting satellites. As a result, the popular satellite tracking software packages such as STSPLUS and TRAKSAT, use TLEs as their primary sources of input data along with the SGP4 orbit propagator.

TLE data is available for most Earth-orbiting satellites from several sources (see Appendix F). VEC2TLE is not intended to replace these as primary sources of TLE data. Rather, its primary purpose is for circumstances in which this data may not be available in a timely fashion. A prime example is the Space Transportation System (STS) where position and velocity state vectors may be the only orbital information available in near real time. In the past, users of the tracking software had little choice but to wait (hours) until the TLE data was available following thruster firings that changed the Shuttle's orbit. It is this situation that resulted in the creation of VEC2TLE. The TLEs computed by VEC2TLE are fully compatible with SGP or SGP4 as true and accurate renditions of the orbit specified by the input state vectors.

Uploaded on behalf of the author.

Michael Dabrowski KD6KMF  
astroman@netcom.com

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Date: (null)  
From: (null)  
To date, the group have this members:

Engineers:  
RAUL BON FOSTER, LU5ALG  
JUAN CARLOS LUCIANI, LU4AGC

JULIO BIANCHI, LW1DUA  
CLAUDIO MARCO ZANELLA, LU4AEY

Technicians:

NORBERTO PENINNI, LU8DYF (LUSAT-1 Control Station)  
JUAN CLEMENTE, LU8ENU  
OMAR CASTRO, LU5EO

Inventors:

EDUARDO SWEET BIRO, LU7AKC

Director:

MARIO IBERTIS RIVERA, LU2BDT

These ones will manage some experiment teams.

You can contact us via Internet, sending a message to

<graps@asarin.org.ar>

or via Packet radio, sending a PERSONAL message to

graps@lu7akc.#col.cf.arg.soam

or via Fax to

(+54-1) 552-1920 (ask for fax)

or via Voice phone to

(+54-1) 642-1664

NOTE: Please post this message over any net or list.

Sincerely yours, Eduardo Sweet Biro. (February 17, 1994)

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End of Ham-Space Digest V94 #50

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